



SEQUENCE LISTING

<110> MISHRA, LOPA

<120> GENES CODING FOR EARLY LIVER DEVELOPMENT...

<130> P04470US02/BAS

<140> US 10/695,994

<141> 2003-10-30

<150> 09/431,184

<151> 1999-11-01

<150> PCT/US98/08656

<151> 1998-04-30

<150> US 08/841,349

<151> 1997-04-30

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<170> PatentIn version 3.0

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cag	tgg	gcc	aac	ctg	gaa	cag	ctc	tca	gcc	att	agg	aag	aag	cgc	cta	2513
Gln	Trp	Ala	Asn	Leu	Glu	Gln	Leu	Ser	Ala	Ile	Arg	Lys	Lys	Arg	Leu	
			715					720					725			
gag	gaa	gcc	tca	tta	ctg	cac	cag	ttc	cag	gct	gat	gct	gat	gat	att	2561

Glu	Glu	Ala	Ser	Leu	Leu	His	Gln	Phe	Gln	Ala	Asp	Ala	Asp	Asp	Ile	
		730					735					740				
gat	gct	tgg	atg	tta	gat	ata	ctc	aag	att	gtc	tcc	agc	aat	gat	gtg	2609
Asp	Ala	Trp	Met	Leu	Asp	Ile	Leu	Lys	Ile	Val	Ser	Ser	Asn	Asp	Val	
		745					750					755				
ggc	cat	gat	gag	tac	tcc	acg	cag	tct	ctg	gtc	aag	aag	cat	aaa	gat	2657
Gly	His	Asp	Glu	Tyr	Ser	Thr	Gln	Ser	Leu	Val	Lys	Lys	His	Lys	Asp	
		760					765				770				775	
gta	gca	gaa	gag	atc	acc	aac	tgc	agg	ccc	act	att	gac	aca	ctg	cat	2705
Val	Ala	Glu	Glu	Ile	Thr	Asn	Cys	Arg	Pro	Thr	Ile	Asp	Thr	Leu	His	
					780										790	
gag	caa	gcc	agt	gcc	ctt	cca	caa	gca	cat	gca	gag	tct	cca	gat	gtg	2753
Glu	Gln	Ala	Ser	Ala	Leu	Pro	Gln	Ala	His	Ala	Glu	Ser	Pro	Asp	Val	
			795					800					805			
aag	ggc	cgg	ctg	gca	gga	att	gag	gag	cgc	tgc	aag	gag	atg	gca	gag	2801
Lys	Gly	Arg	Leu	Ala	Gly	Ile	Glu	Glu	Arg	Cys	Lys	Glu	Met	Ala	Glu	
		810					815					820				
tta	aca	cgg	cta	agg	aag	cag	gct	ctg	cag	gac	acc	ctg	gcc	ctg	tac	2849
Leu	Thr	Arg	Leu	Arg	Lys	Gln	Ala	Leu	Gln	Asp	Thr	Leu	Ala	Leu	Tyr	
		825					830					835				
aag	atg	ttc	agt	gag	gct	gat	gcc	tgt	gag	ctc	tgg	att	gac	gag	aag	2897
Lys	Met	Phe	Ser	Glu	Ala	Asp	Ala	Cys	Glu	Leu	Trp	Ile	Asp	Glu	Lys	
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gag	cag	tgg	ctc	aac	aac	atg	cag	atc	cca	gag	aag	ctg	gag	gac	ctg	2945
Glu	Gln	Trp	Leu	Asn	Asn	Met	Gln	Ile	Pro	Glu	Lys	Leu	Glu	Asp	Leu	
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gaa	gtc	atc	cag	cac	aga	ttt	gag	agc	cta	gaa	cca	gaa	atg	aac	aac	2993
Glu	Val	Ile	Gln	His	Arg	Phe	Glu	Ser	Leu	Glu	Pro	Glu	Met	Asn	Asn	
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cag	gct	tcc	cgg	gtt	gct	gtg	gtg	aac	cag	att	gca	cgg	cag	ctg	atg	3041
Gln	Ala	Ser	Arg	Val	Ala	Val	Val	Asn	Gln	Ile	Ala	Arg	Gln	Leu	Met	
		890					895					900				
cac	aat	ggc	cac	ccc	agt	gaa	aag	gaa	atc	aga	gct	cag	caa	gac	aaa	3089
His	Asn	Gly	His	Pro	Ser	Glu	Lys	Glu	Ile	Arg	Ala	Gln	Gln	Asp	Lys	
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ctc	aac	acg	agg	tgg	agt	cag	ttc	aga	gaa	ctg	gtg	gac	agg	aaa	aag	3137
Leu	Asn	Thr	Arg	Trp	Ser	Gln	Phe	Arg	Glu	Leu	Val	Asp	Arg	Lys	Lys	
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gat	gct	ctt	ctg	tct	gcc	ctg	agc	atc	cag	aac	tac	cac	ctc	gag	tgc	3185
Asp	Ala	Leu	Leu	Ser	Ala	Leu	Ser	Ile	Gln	Asn	Tyr	His	Leu	Glu	Cys	
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aat	gaa	acc	aaa	tcc	tgc	atc	cgg	gag	aag	acc	aag	gtc	atc	gag	tct	3233
Asn	Glu	Thr	Lys	Ser	Cys	Ile	Arg	Glu	Lys	Thr	Lys	Val	Ile	Glu	Ser	
			955					960					965			
acc	caa	gac	ctt	ggc	aat	gac	ctg	gca	ggt	gtc	atg	gcc	ctg	cag	tgc	3281
Thr	Gln	Asp	Leu	Gly	Asn	Asp	Leu	Ala	Gly	Val	Met	Ala	Leu	Gln	Cys	
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Lys	Leu	Thr	Gly	Met	Glu	Arg	Asp	Leu	Val	Ala	Ile	Glu	Ala	Lys	Leu	
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Ser	Asp	Leu	Gln	Lys	Glu	Ala	Glu	Lys	Leu	Glu	Ser	Glu	His	Pro	Asp	
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cag	gct	caa	gct	atc	ctg	tct	cgg	ctg	gcc	gag	atc	agt	gat	gtg	tgg	3425
Gln	Ala	Gln	Ala	Ile	Leu	Ser	Arg	Leu	Ala	Glu	Ile	Ser	Asp	Val	Trp	
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gag	gaa	atg	aag	aca	acc	ctg	aag	aac	cga	gag	gcc	tcc	ctg	gga	gag	3473

Glu	Glu	Met	Lys	Thr	Thr	Leu	Lys	Asn	Arg	Glu	Ala	Ser	Leu	Gly	Glu		
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gcc	agc	aag	ctg	cag	cag	ttt	ctg	cgg	gac	ttg	gac	gac	ttc	cag	tct	3521	
Ala	Ser	Lys	Leu	Gln	Gln	Phe	Leu	Arg	Asp	Leu	Asp	Asp	Phe	Gln	Ser		
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Trp	Leu	Ser	Arg	Thr	Gln	Thr	Ala	Ile	Ala	Ser	Glu	Asp	Met	Pro	Asn		
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Thr	Leu	Thr	Glu	Ala	Lys	Leu	Leu	Thr	Gln	His	Glu	Asn	Ile	Lys			
1080					1085				1090				1095				
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Asn	Glu	Ile	Asp	Asn	Tyr	Glu	Glu	Asp	Tyr	Gln	Lys	Met	Arg	Asp	Met		
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ggc	gag	atg	gtc	acc	cag	ggg	cag	act	gat	gcc	cag	tat	atg	ttt	ctg	3713	
Gly	Glu	Met	Val	Thr	Gln	Gly	Gln	Thr	Asp	Ala	Gln	Tyr	Met	Phe	Leu		
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cgg	cag	cgg	ctg	cag	gcc	tta	gac	act	ggc	tgg	aat	gag	ctc	cac	aaa	3761	
Arg	Gln	Arg	Leu	Gln	Ala	Leu	Asp	Thr	Gly	Trp	Asn	Glu	Leu	His	Lys		
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Met	Trp	Glu	Asn	Arg	Gln	Asn	Leu	Leu	Ser	Gln	Ser	His	Ala	Tyr	Gln		
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cag	ttc	ctt	agg	gac	acc	aaa	caa	gct	gaa	gct	ttt	ctt	aat	aac	cag	3857	
Gln	Phe	Leu	Arg	Asp	Thr	Lys	Gln	Ala	Glu	Ala	Phe	Leu	Asn	Asn	Gln		
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gag	tat	gtt	ttg	gct	cat	act	gaa	atg	ccc	acc	acc	ctg	gaa	gga	gct	3905	
Glu	Tyr	Val	Leu	Ala	His	Thr	Glu	Met	Pro	Thr	Thr	Leu	Glu	Gly	Ala		
		1180				1185				1190							
gaa	gca	gcc	att	aaa	aag	cag	gag	gac	ttc	atg	acc	acc	atg	gat	gcc	3953	
Glu	Ala	Ala	Ile	Lys	Lys	Gln	Glu	Asp	Phe	Met	Thr	Thr	Met	Asp	Ala		
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Asn	Glu	Glu	Lys	Ile	Asn	Ala	Val	Val	Glu	Thr	Gly	Arg	Arg	Leu	Val		
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Ser	Asp	Gly	Asn	Ile	Asn	Ser	Asp	Arg	Ile	Gln	Glu	Lys	Val	Asp	Ser		
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Ile	Asp	Asp	Arg	His	Arg	Lys	Asn	Arg	Glu	Ala	Ala	Ser	Glu	Leu	Leu		
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Met	Arg	Leu	Lys	Asp	Asn	Arg	Asp	Leu	Gln	Lys	Phe	Leu	Gln	Asp	Cys		
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Gln	Glu	Leu	Ser	Leu	Trp	Ile	Asn	Glu	Lys	Met	Leu	Thr	Ala	Gln	Asp		
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Met	Ser	Tyr	Asp	Glu	Ala	Arg	Asn	Leu	His	Ser	Lys	Trp	Leu	Lys	His		
		1290				1295				1300							
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Gln	Ala	Phe	Met	Ala	Glu	Leu	Ala	Ser	Asn	Lys	Glu	Trp	Leu	Asp	Lys		
		1305				1310				1315							
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Ala Val Val Lys Glu Lys Leu Thr Gly Leu His Lys Met Trp Glu Val	
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Leu Glu Ser Thr Thr Gln Thr Lys Ala Gln Arg Leu Phe Asp Ala Asn	
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aag gct gag ctt ttc aca caa agc tgc gca gat ctt gac aaa tgg cta	4481
Lys Ala Glu Leu Phe Thr Gln Ser Cys Ala Asp Leu Asp Lys Trp Leu	
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cat ggc ctg gag agc cag att caa tct gac gac tat ggc aaa gac ctt	4529
His Gly Leu Glu Ser Gln Ile Gln Ser Asp Asp Tyr Gly Lys Asp Leu	
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acc agt gtc aat att ctt ctg aaa aag caa cag atg ctg gag aat cag	4577
Thr Ser Val Asn Ile Leu Lys Lys Gln Gln Met Leu Glu Asn Gln	
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Met Glu Val Arg Lys Lys Glu Ile Glu Glu Leu Gln Ser Gln Ala Gln	
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gcg ctg agt cag gag ggg aag agc aca gat gag gtg gac agc aaa cgc	4673
Ala Leu Ser Gln Glu Gly Lys Ser Thr Asp Glu Val Asp Ser Lys Arg	
1435 1440 1445	
ctt act gtg cag acc aag ttc atg gag ctt ctg gag ccc ttg agt gag	4721
Leu Thr Val Gln Thr Lys Phe Met Glu Leu Leu Glu Pro Leu Ser Glu	
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agg aag cat aac ctg tta gct tcc aag gag atc cat cag ttc aac agg	4769
Arg Lys His Asn Leu Leu Ala Ser Lys Glu Ile His Gln Phe Asn Arg	
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gat gtg gag gac gaa atc cta tgg gtt ggc gag agg atg cct ttg gca	4817
Asp Val Glu Asp Glu Ile Leu Trp Val Gly Glu Arg Met Pro Leu Ala	
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act tcc aca gat cat ggc cat aac ctt caa act gtg cag ctg tta ata	4865
Thr Ser Thr Asp His Gly His Asn Leu Gln Thr Val Gln Leu Leu Ile	
1500 1505 1510	
aag aaa aac cag acc ctc cag aaa gaa atc cag gga cac cag cct cgt	4913
Lys Lys Asn Gln Thr Leu Gln Lys Glu Ile Gln Gly His Gln Pro Arg	
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att gat gac atc ttt gag agg agt caa aac atc atc aca gat agc agc	4961
Ile Asp Asp Ile Phe Glu Arg Ser Gln Asn Ile Ile Thr Asp Ser Ser	
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agc ctc aat gcc gag gct atc agg cag agg ctc gct gac ctg aag cag	5009
Ser Leu Asn Ala Glu Ala Ile Arg Gln Arg Leu Ala Asp Leu Lys Gln	
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ctg tgg ggg ctc ctc att gag gaa act gag aaa cgc cat aga cgg ctg	5057
Leu Trp Gly Leu Leu Ile Glu Glu Thr Glu Lys Arg His Arg Arg Leu	
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gag gag gca cac aag gcg cag cag tac tac ttt gat gca gct gaa gcc	5105
Glu Glu Ala His Lys Ala Gln Gln Tyr Tyr Phe Asp Ala Ala Glu Ala	
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gag gca tgg atg agt gaa cag gag ttg tac atg atg tct gag gaa aag	5153
Glu Ala Trp Met Ser Glu Gln Glu Leu Tyr Met Met Ser Glu Glu Lys	
1595 1600 1605	
gcc aag gat gag cag agt gct gtc tct atg ttg aaa aag cac cag att	5201
Ala Lys Asp Glu Gln Ser Ala Val Ser Met Leu Lys Lys His Gln Ile	
1610 1615 1620	
tta gag caa gct gtt gag gac tat gca gag aca gta cac cag ctc tcc	5249
Leu Glu Gln Ala Val Glu Asp Tyr Ala Glu Thr Val His Gln Leu Ser	
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aag act agc cgg gcg ctg gtg gct gac agc cat ccc gaa agt gag cgt	5297
Lys Thr Ser Arg Ala Leu Val Ala Asp Ser His Pro Glu Ser Glu Arg	
1640 1645 1650 1655	
att agc atg cgg cag tca aag gtc gac aag ctg tat gct ggc ctg aag	5345
Ile Ser Met Arg Gln Ser Lys Val Asp Lys Leu Tyr Ala Gly Leu Lys	
1660 1665 1670	
gac ctt gct gag gag agg aga gga aaa ctt gat gag agg cac agg ctg	5393
Asp Leu Ala Glu Glu Arg Arg Gly Lys Leu Asp Glu Arg His Arg Leu	
1675 1680 1685	
ttc cag ctc aac aga gag gtg gat gac ctg gaa cag tgg atc gct gag	5441
Phe Gln Leu Asn Arg Glu Val Asp Asp Leu Glu Gln Trp Ile Ala Glu	
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Arg Glu Val Val Ala Gly Ser His Glu Leu Gly Gln Asp Tyr Glu His	
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Val Thr Met Leu Gln Glu Arg Phe Arg Glu Phe Ala Arg Asp Thr Gly	
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aac att ggg cag gag cgt gtg gat aca gtt aat aac atg gca gat gaa	5585
Asn Ile Gly Gln Glu Arg Val Asp Thr Val Asn Asn Met Ala Asp Glu	
1740 1745 1750	
ctc atc aac tct gga cat tca gat gct gcc acc att gct gag tgg aaa	5633
Leu Ile Asn Ser Gly His Ser Asp Ala Ala Thr Ile Ala Glu Trp Lys	
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Asp Gly Leu Asn Glu Ala Trp Ala Asp Leu Leu Glu Leu Ile Asp Thr	
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aga aca cag att ctt gct gcc tca tat gaa ctt cat aag ttt tac cat	5729
Arg Thr Gln Ile Leu Ala Ala Ser Tyr Glu Leu His Lys Phe Tyr His	
1785 1790 1795	
gat gcc aag gag atc ttt ggc cga atc cag gac aaa cac aag aaa ctc	5777
Asp Ala Lys Glu Ile Phe Gly Arg Ile Gln Asp Lys His Lys Lys Leu	
1800 1805 1810 1815	
cct gag gag ctt gga aga gat caa aac act gtg gaa act tta cag aga	5825
Pro Glu Glu Leu Gly Arg Asp Gln Asn Thr Val Glu Thr Leu Gln Arg	
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atg cac acc acc ttt gag cac gac atc caa gct ctg ggc act cag gtg	5873
Met His Thr Thr Phe Glu His Asp Ile Gln Ala Leu Gly Thr Gln Val	
1835 1840 1845	
agg cag ctg cag gag gat gca gct cgc ctc cag gca gcc tat gca ggg	5921
Arg Gln Leu Gln Glu Asp Ala Ala Arg Leu Gln Ala Ala Tyr Ala Gly	
1850 1855 1860	
gac aag gct gat gac atc cag aag cgt gag aat gag gtc ctg gaa gcc	5969
Asp Lys Ala Asp Asp Ile Gln Lys Arg Glu Asn Glu Val Leu Glu Ala	
1865 1870 1875	
tgg aag tcc ctg ctg gat gct tgt gag ggt cgc agg gtg cgg ctg gta	6017
Trp Lys Ser Leu Leu Asp Ala Cys Glu Gly Arg Arg Val Arg Leu Val	
1880 1885 1890 1895	
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Asp Thr Gly Asp Lys Phe Arg Phe Phe Ser Met Val Arg Asp Leu Met	
1900 1905 1910	
ctc tgg atg gaa gat gtc atc cgg cag atc gag gcc cag gag aaa cca	6113
Leu Trp Met Glu Asp Val Ile Arg Gln Ile Glu Ala Gln Glu Lys Pro	
1915 1920 1925	
cgg gat gtg tca tct gtt gaa ctg tta atg aat aat cat caa ggt atc	6161
Arg Asp Val Ser Ser Val Glu Leu Leu Met Asn Asn His Gln Gly Ile	

1930	1935	1940	
aaa gct gaa att gat gct cgt aat gac agc ttt aca gcc tgc att gag			6209
Lys Ala Glu Ile Asp Ala Arg Asn Asp Ser Phe Thr Ala Cys Ile Glu			
1945	1950	1955	
ctt ggg aaa tcc ctg ctg gca cgg aaa cac tat gct tct gag gag atc			6257
Leu Gly Lys Ser Leu Leu Ala Arg Lys His Tyr Ala Ser Glu Glu Ile			
1960	1965	1970	1975
aag gaa aag tta ctg cag ctg aca gag aaa aga aaa gaa atg att gac			6305
Lys Glu Lys Leu Leu Gln Leu Thr Glu Lys Arg Lys Glu Met Ile Asp			
1980	1985	1990	
aag tgg gaa gac cgg tgg gag tgg tta aga ctg att ttg gag gtc cat			6353
Lys Trp Glu Asp Arg Trp Glu Trp Leu Arg Leu Ile Leu Glu Val His			
1995	2000	2005	
cag ttc tca agg gat gcc agt gtg gca gag gct tgg ctg ctt gga cag			6401
Gln Phe Ser Arg Asp Ala Ser Val Ala Glu Ala Trp Leu Leu Gly Gln			
2010	2015	2020	
gaa cca tac cta tcc agc cgt gaa att ggc cag agt gta gac gaa gtg			6449
Glu Pro Tyr Leu Ser Ser Arg Glu Ile Gly Gln Ser Val Asp Glu Val			
2025	2030	2035	
gag aag ctt att aag cgc cat gag gcg ttt gaa aag tct gca gcg acc			6497
Glu Lys Leu Ile Lys Arg His Glu Ala Phe Glu Lys Ser Ala Ala Thr			
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tgg gat gag aga ttc tct gct ctg gaa agg ctg aca acg ttg gag cta			6545
Trp Asp Glu Arg Phe Ser Ala Leu Glu Arg Leu Thr Thr Leu Glu Leu			
2060	2065	2070	
ctg gaa gtg cgc aga cag caa gag gaa gaa gaa aga aag agg cgg cca			6593
Leu Glu Val Arg Arg Gln Gln Glu Glu Glu Arg Lys Arg Arg Pro			
2075	2080	2085	
cct tct ccg gac cca aac acg aag gtt tca gag gag gct gag tcc cag			6641
Pro Ser Pro Asp Pro Asn Thr Lys Val Ser Glu Glu Ala Glu Ser Gln			
2090	2095	2100	
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Gln Trp Asp Thr Ser Lys Gly Asp Gln Val Ser Gln Asn Gly Leu Pro			
2105	2110	2115	
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Ala Glu Gln Gly Ser Pro Arg Val Ser Tyr Arg Ser Gln Thr Tyr Gln			
2120	2125	2130	2135
aac tac aaa aac ttt aat agc aga cgg aca gcc agt gac cat tca tgg			6785
Asn Tyr Lys Asn Phe Asn Ser Arg Arg Thr Ala Ser Asp His Ser Trp			
2140	2145	2150	
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Ser Gly Met			
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caaagc			6960

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		35					40					45				
Lys	Trp	Val	Asn	Ser	His	Leu	Ala	Arg	Val	Ser	Cys	Arg	Ile	Thr	Asp	
	50					55					60					
Leu	Tyr	Thr	Asp	Leu	Arg	Asp	Gly	Arg	Met	Leu	Ile	Lys	Leu	Leu	Glu	
65					70					75					80	
Val	Leu	Ser	Gly	Glu	Arg	Leu	Pro	Lys	Pro	Thr	Lys	Gly	Arg	Met	Arg	
			85						90					95		
Ile	His	Cys	Leu	Glu	Asn	Val	Asp	Lys	Ala	Leu	Gln	Phe	Leu	Lys	Glu	
			100					105					110			
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Thr Ser Ser Ile Ser Gly Pro Leu Ser Pro Ala Tyr Thr Gly Gln Val
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cct tac aac tac aac caa ctg gaa gga aga ttc aaa cag ctc caa gat 512
Pro Tyr Asn Tyr Asn Gln Leu Glu Gly Arg Phe Lys Gln Leu Gln Asp
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Glu Arg Gly Glu Ala Val Gln Lys Lys Thr Phe Thr Lys Trp Val Asn Ser
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cac ctt gcg aga gtg tcc tgc cga atc aca gac ctg tac acg gac ctt 608
His Leu Ala Arg Val Ser Cys Arg Ile Thr Asp Leu Tyr Thr Asp Leu
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Arg Asp Gly Arg Met Leu Ile Lys Leu Leu Glu Val Leu Ser Gly Glu
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Arg Leu Pro Lys Pro Thr Lys Gly Arg Met Arg Ile His Cys Leu Glu
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acg ttg gag cta ctg gaa gtg cgc aga cag caa gag gaa gaa gaa aga 848
Thr Leu Glu Leu Leu Glu Val Arg Arg Gln Gln Glu Glu Glu Glu Arg
135 140 145

gct gag tcc cag caa tgg gat act tca aaa gga gac caa gtt tcc cag 944
Ala Glu Ser Gln Gln Trp Asp Thr Ser Lys Gly Asp Gln Val Ser Gln
170 175 180

caa acg tac caa aac tac aaa aac ttt aat agc aga cgg aca gcc agt 1040
Gln Thr Tyr Gln Asn Tyr Lys Asn Phe Asn Ser Arg Arg Thr Ala Ser
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 Leu Tyr Thr Asp Leu Arg Asp Gly Arg Met Leu Ile Lys Leu Leu Glu
 65 70 75 80
 Val Leu Ser Gly Glu Arg Leu Pro Lys Pro Thr Lys Gly Arg Met Arg
 85 90 95
 Ile His Cys Leu Glu Asn Val Asp Lys Ala Leu Gln Phe Leu Lys Glu
 100 105 110
 Gln Arg Val His Leu Glu Asn Met Gly Ser His Asp Ile Val Asp Gly
 115 120 125
 Asn His Arg Leu Thr Thr Leu Glu Leu Leu Glu Val Arg Arg Gln Gln
 130 135 140
 Glu Glu Glu Glu Arg Lys Arg Arg Pro Pro Ser Pro Asp Pro Asn Thr
 145 150 155 160
 Lys Val Ser Glu Glu Ala Glu Ser Gln Gln Trp Asp Thr Ser Lys Gly
 165 170 175
 Asp Gln Val Ser Gln Asn Gly Leu Pro Ala Glu Gln Gly Ser Pro Arg
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 <222> (322)..(1509)

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ccagaaagtt tcaggccatc c atg agc cac cag gaa agg att gcc agc cag	351
Met Ser His Gln Glu Arg Ile Ala Ser Gln	
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Arg Arg Thr Thr Ala Glu Val Pro Met His Arg Ser Thr Ala Asn Gln	
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Ser Lys Arg Ser Arg Ser Pro Phe Ala Ser Thr Arg Arg Arg Trp Asp	
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Asp Ser Glu Ser Ser Gly Ala Ser Leu Ala Val Glu Ser Glu Asp Tyr	
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Ser Arg Trp Arg Asp Ala Ala Asp Ala Glu Glu Ala His Ala Glu Gly	
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Leu Ala Arg Arg Gly Arg Gly Glu Ala Ala Ser Ser Ser Glu Pro Arg	
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Tyr Ala Glu Asp Gln Asp Ala Arg Ser Glu Gln Ala Lys Ala Asp Lys	
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gtg cca aga cgg cgg cga acc atg gca gac cct gac ttc tgg gca tac	687
Val Pro Arg Arg Arg Arg Thr Met Ala Asp Pro Asp Phe Trp Ala Tyr	
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acc gac gat tac tac cga tac tac gag gaa gat tct gac agc gac aaa	735
Thr Asp Asp Tyr Tyr Arg Tyr Tyr Glu Glu Asp Ser Asp Ser Asp Lys	
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Glu Trp Met Ala Ala Leu Arg Arg Lys Tyr Arg Ser Arg Glu Gln Pro	
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Gln Ser Ser Ser Gly Glu Ser Trp Glu Leu Leu Pro Gly Lys Glu Glu	
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Leu Glu Arg Gln Gln Ala Gly Ala Gly Ser Leu Ala Ser Ala Gly Ser	
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Asn Gly Ser Gly Tyr Pro Glu Glu Val Gln Asp Pro Ser Leu Gln Glu	
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gaa gaa cag gcc tct ctg gaa gaa gga gaa atc cct tgg ctt cgc tac	975
Glu Glu Gln Ala Ser Leu Glu Glu Gly Glu Ile Pro Trp Leu Arg Tyr	
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 Asp Asp Ser Ser Val Ser Glu Asp Leu Glu Val Asp Trp Ser Leu Phe
 255 260 265

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 Asp Gly Phe Ala Asp Gly Leu Gly Val Ala Glu Ala Ile Ser Tyr Val
 270 275 280

gat cct cag ttc ctc acc tac atg gct ctg gaa gag cgt ctg gcc cag 1215
 Asp Pro Gln Phe Leu Thr Tyr Met Ala Leu Glu Glu Arg Leu Ala Gln
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 Ala Met Glu Thr Ala Leu Ala His Leu Glu Ser Leu Ala Val Asp Val
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gaa gtg gcc aac cca cca gca agc aag gag agc att gat gcc ctt cct 1311
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 315 320 325 330

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 Glu Ile Leu Val Thr Glu Asp His Gly Ala Val Gly Gln Glu Met Cys
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 Cys Pro Ile Cys Cys Ser Glu Tyr Val Lys Gly Glu Val Ala Thr Glu
 350 355 360

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 Gln Lys Ser Gly Thr Cys Pro Val Cys Arg Cys Met Phe Pro Pro Pro
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 Leu
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1964

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<211> 395

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Pro Phe Ala Ser Thr Arg Arg Arg Trp Asp Asp Ser Glu Ser Ser Gly
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Ala Ser Leu Ala Val Glu Ser Glu Asp Tyr Ser Arg Trp Arg Asp Ala
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Ala Asp Ala Glu Glu Ala His Ala Glu Gly Leu Ala Arg Arg Gly Arg
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Gly Glu Ala Ala Ser Ser Ser Glu Pro Arg Tyr Ala Glu Asp Gln Asp
85 90 95

Ala Arg Ser Glu Gln Ala Lys Ala Asp Lys Val Pro Arg Arg Arg Arg
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Thr Met Ala Asp Pro Asp Phe Trp Ala Tyr Thr Asp Asp Tyr Tyr Arg
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Tyr Tyr Glu Glu Asp Ser Asp Ser Asp Lys Glu Trp Met Ala Ala Leu
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Arg Arg Lys Tyr Arg Ser Arg Glu Gln Pro Gln Ser Ser Ser Gly Glu
145 150 155 160

Ser Trp Glu Leu Leu Pro Gly Lys Glu Glu Leu Glu Arg Gln Gln Ala
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Gly Ala Gly Ser Leu Ala Ser Ala Gly Ser Asn Gly Ser Gly Tyr Pro
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Glu Glu Val Gln Asp Pro Ser Leu Gln Glu Glu Glu Gln Ala Ser Leu
195 200 205

Glu Glu Gly Glu Ile Pro Trp Leu Arg Tyr Asn Glu Asn Glu Ser Ser
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Ser Glu Gly Asp Asn Glu Ser Thr His Glu Leu Ile Gln Pro Gly Met
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Tyr Met Ala Leu Glu Glu Arg Leu Ala Gln Ala Met Glu Thr Ala Leu
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325 330 335
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Glu Tyr Val Lys Gly Glu Val Ala Thr Glu Leu Pro Cys His His Tyr
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<210> 11

<211> 1177

<212> DNA

<213> Mus musculus

<220>

<221> misc_feature

<222>

<223> n=a or c or t or g

<400> 11

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<210> 12

<211> 2998

<212> DNA

<213> Mus musculus

<220>

<221> misc_feature

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<223> n=(a or c or t or g)

<400> 12

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ctgtttaata ccttggtatt tataattttc ataagtttat ttgtattaat aggaactctt 720
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<210> 13
<211> 1121
<212> DNA
<213> Mus musculus

<220>
<221> misc_feature
<222>
<223> n=a or c or t or g

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<400> 13
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agtacccag ntaatggctt ncccatatgt cactgaagga gtgtcagttc tcagcatttt 180
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ggcagtggtc tcagtagtgc agttcatgcc tgggtgggtg aactagggtg caacgaagtc 360
actttgaact cttttgctaa ctaaataagc caaataaaca aatcatgaaa tactgattag 420
caatgcaata tttcatggca tgggaagagc ttcgacttct ccatcgggtg caaggagcag 480
cttctggaag gaaggctctg agaaaacaac tgacggggag ctccgaggag ccctgaacac 540
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gccacgggtt cttagcacta cagatgttgc agtattgtgc aggagcattc atgctcggca 720
taggcaggca ctcttgttg aacatgtgcc ggcagtggaa gaccaccacg ctgaagggtc 780
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ctacgaggat tttcttgcat ccttcccga gcagaatctt caagttataa tcttgagaa 960
ttttaaccaa ggaatctctc aaattgggaa tctccattcc ttcttaatt cgggtggataa 1020
gtagaatcgg gtccacatgt gtgccaatgt tgttcaacaa gccagtgata aatggtggtt 1080
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<210> 14
<211> 779
<212> DNA
<213> Mus musculus

<220>
<221> misc_feature
<222>
<223> n=a or c or t or g

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<400> 14
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ctaccaaaaca gaaaagaatt tgagtcctct tgctatgagg ctctcgctcc catctcaggc 360
gagcttcctg cccctcaccc aagcttggga ggtagagtta tggagagggc aaggaagcag 420
gactggaaag atagacttat ggatccacca ctcataaagt cacaaagtcc cctcacacct 480
gctagactta gactctaaat cattacgttg tcaccaacag aggtgactcc tcaaccacaa 540
gagcctgtag tgagcttcaa gagagaagag gacaagnacag acctggactg catgaccttg 600
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agncaaacag aagccctgtc tgtccccatt ggtgggtaat gtagctgatg tggctgggtc 720
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<210> 15
<211> 981
<212> DNA
<213> Mus musculus

<220>
<221> misc_feature
<222>
<223> n=(a or c or t or g)

<400> 15
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agccatcgtc agagaagttt cttctttnnt tttgatagga gctaacacag cgacccacan 180
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agtcacagag gctgtggctg cccagggcct gcacggtcca agctggctga gattccagtg 420
ctgagagaga caattcaaca cggntccca cccctagnca agaagttatc tccaactgat 480
atccacttgc aaaggaaaaa attagggggn tagagagatg gctcagtggg taagagcact 540
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caattggctg gaaaacttgc aacattgcct ggagaactgc caaattgcct ggagagctgc 660
caaattggcc tggagagctg cctacatggc ctggagagct gccacatgg cctggagaac 720
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<210> 16
<211> 685
<212> DNA
<213> Mus musculus

<220>
<221> misc_feature
<222>
<223> n=(a or c or t or g)

<400> 16
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cactggcgag accctttatc acacagggac accccttagg ttggagtttt ccttgtaatg 120
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tctctcatgt ctggaggaag tttggtgaag gagtcttctg tttgctcaca taggagagat 540
ctaatacagc cactatccat aattaaaaat ctctgtgaga gaggcatgac gaggttctcc 600
cagtctgtca agggatgtga atatgtgttn ccctgtcatc ctgtcatgaa gcctctcttt 660
ctctctctct cctcgtgccg aattc 685

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<210> 17
<211> 471
<212> DNA
<213> Mus musculus

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<220>
<221> misc_feature
<222>
<223> n=(a or c or t or g)

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<400> 17
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angtnggttn aatanaccng gggaggtgtc tgaaaanagt ggncacgtac tgttctcaga 180
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tagccaatnc agtctatgac gatttccttt tagcagttct tgtttgtttt cttaatgata 420
gccatactga ttgtgagat ttacagcagc actagcaagc tggaactcga g 471

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<210> 18
<211> 467
<212> DNA
<213> Mus musculus

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<220>
<221> misc_feature
<222>
<223> n=(a or c or t or g)

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<400> 18
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tttttnnnnn aanaaanttt taaagttttt ttttttttat naaaannttt ccaagggggg 120
gangggttag aaganagcca nagcctggnc ccccctgcc aaaaaacca gaggggggtt 180
gatgtcccca agtccagttg tcaccctgaa gaagttcccc acgatttccc tgggtggccc 240
ccgggagtag gtccagagtg tcaccctttc catttgggag ctgtgggaag ggngtgggnt 300
ccctcccagn ggggccccaa acccttctcc tgaacagntc ctgatttctg accatctttc 360
caattccacg gattcaaaga gcatgaccct aggtaagcaa gccagggtcaa gagcattgct 420
tgtctgnagg aaaaggaagg gtccctcctg gcctcgtgcc gaattcc 467

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<210> 19
<211> 13
<212> PRT
<213> Mus musculus

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<400> 19

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1 5 10

<210> 20

<211> 14

<212> PRT

<213> Mus musculus

<400> 20

Phe Asn Ser Arg Arg Thr Ala Ser Asp His Ser Trp Ser Gly
1 5 10

<210> 21

<211> 13

<212> PRT

<213> Mus musculus

<400> 21

Leu Arg Arg Lys Tyr Arg Ser Arg Glu Gln Pro Gln Ser
1 5 10

<210> 22

<211> 18

<212> PRT

<213> Mus musculus

<400> 22

Ser Ala Gln Ser Leu Val Val Thr Leu Gly Arg Val Glu Gly Gly Ile
1 5 10 15

Arg Val

<210> 23

<211> 19

<212> PRT

<213> Mus musculus

<400> 23

Cys Ser Ala Gln Ser Leu Val Val Thr Leu Gly Arg Val Glu Gly Gly
1 5 10 15

Ile Arg Val

<210> 24

<211> 17

<212> PRT

<213> Mus musculus

<400> 24

Lys Ile Glu Gly Ser Ser Lys Cys Ala Pro Leu Arg Pro Ala Ser Arg
1 5 10 15

Leu

<210> 25

<211> 17

<212> PRT

<213> Mus musculus

<400> 25

Cys Ala Pro Leu Arg Pro Ala Ser Arg Leu Pro Ala Ser Gln Thr Leu
1 5 10 15

Gly

<210> 26

<211> 16

<212> PRT

<213> Mus musculus

<400> 26

Pro Pro Arg Glu Tyr Arg Ala Ser Gly Ser Arg Arg Gly Met Ala Tyr
1 5 10 15

<210> 27

<211> 17

<212> PRT

<213> Mus musculus

<400> 27

Pro Pro Arg Glu Tyr Arg Ala Ser Gly Ser Arg Arg Gly Met Ala Tyr
1 5 10 15

Cys

<210> 28

<211> 16

<212> PRT

<213> Mus musculus

<400> 28

Cys Lys Val Pro Arg Arg Arg Arg Thr Met Ala Asp Pro Asp Phe Trp
1 5 10 15